

ACCESSION #: 9701070206

LICENSEE EVENT REPORT (LER)

FACILITY NAME: BIG ROCK POINT NUCLEAR PLANT PAGE: 1 OF 3

DOCKET NUMBER: 05000155

TITLE: Automatic Reactor Scram Initiated by Turbine Trip.

EVENT DATE: 12/07/96 LER #: 96-013-00 REPORT DATE: 01/02/97

OTHER FACILITIES INVOLVED: DOCKET NO: 05000

OPERATING MODE: Y POWER LEVEL: 97.5

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10
CFR SECTION:

50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:

NAME: Michael D. Bourassa, Licensing TELEPHONE: (616) 547-8244
Supervisor

COMPONENT FAILURE DESCRIPTION:

CAUSE: B SYSTEM: SB COMPONENT: RG MANUFACTURER: G080
REPORTABLE NPRDS: N

SUPPLEMENTAL REPORT EXPECTED:

ABSTRACT:

On December 7, 1996, @ 1210, Big Rock Point experienced an automatic reactor scram initiated by a turbine/generator trip. The trip was caused by the inability of the Amplidyne voltage regulator to provide the necessary feedback control for the plant generator excitation circuitry. A resistor failed within the associated logic circuit. When the turbine tripped, the turbine stop valve closed, causing reactor power to increase beyond the high power scram setpoint, resulting in an automatic reactor scram. All systems operated as expected.

The damaged Amplidyne voltage regulator resistor was replaced. The resistor failure was attributed to age degradation coupled with the effects of constant energizing and deenergizing of the unit (thermal expansion) of the wire wound wrap. Similar resistors associated with the Amplidyne voltage regulator will be replaced during the next refueling outage.

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IDENTIFICATION OF EVENT

This event is reportable to the Nuclear Regulatory Commission pursuant to:

1) 10 CFR 50.72(b)(2)(fi): Any event or condition that results in a manual or automatic actuation that results in a manual or automatic actuation of any Engineered Safety Feature (ESF), including the Reactor Protection System.

2) 10 CFR 50.73(a)(2)(iv): Any event or condition that results in a manual or automatic actuation that results in a manual or automatic actuation of any Engineered Safety Feature (ESF), including the Reactor

Protection System.

REFERENCES

Condition Report C-BRP-96-1028

DESCRIPTION OF EVENT

On December 7, 1996, 1200, operators observed a drop in the line voltage from about 140 KVA to 137 KVA. Electric Systems Operations (Jackson Power Control) was informed, and they raised the voltage level back to about 140 KVA. However, the voltage did not remain steady and dropped once again. The operators attempted to "boost" voltage with the Amplidyne voltage regulator. The boost attempts were unsuccessful, and @ 1210, Big Rock Point experienced an automatic reactor [RCT] scram initiated by a turbine/generator [TURB;GEN] trip. When the turbine tripped the turbine stop valve [ISV] closed causing reactor power to increase beyond the high power (a.k.a. high neutron flux) scram setpoint of 120 5%, resulting in an automatic reactor scram. All systems operated as expected.

ROOT CAUSE

The turbine/generator trip was caused by the inability of the Amplidyne voltage regulator [RG] to provide the necessary feedback control for the plant generator [GEN] excitation circuitry due to a failed resistor within the associated logic circuit. The resistor failure is attributed to age degradation - original equipment; > 34 years old - coupled with the effects of constant energizing and de-energizing of the unit (thermal expansion) of the wire wound wrap.

CORRECTIVE ACTION

The Amplidyne voltage regulator was tested to verify that the resistor, and not some other component, was at fault. The damaged Amplidyne voltage regulator resistor was then replaced. Similar resistors associated with the Amplidyne voltage regulator will be replaced during the next refueling outage in 1997.

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SAFETY SIGNIFICANCE

The plant response to the Amplidyne voltage regulator failure consisted of the normal automatic and manual actions required to satisfy the critical safety functions necessary to achieve a stable shutdown condition, limiting the safety significance of this event. When the Amplidyne voltage regulator resistor failed and the turbine stop valve closed, a rapid rise (spike) in reactor pressure and an associated very rapid rise in core power (approximately 140% - collapsing voids) was initiated. The reactor scrambled on high power, or high neutron flux (120 5%). Following the reactor trip, the control rods inserted and power rapidly decreased to decay heat levels. All systems operated as expected. Plant response to the transient was within the design basis of the facility.

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Consumers

Power Patrick M Donnelly

POWERING Plant Manager
MICHIGAN'S PROGRESS

Big Rock Point Nuclear Plant, 10269 US-31 North, Charlevoix, MI 49720

January 2, 1997

Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

DOCKET 50-155 - LICENSE DPR-6 - BIG ROCK POINT PLANT - LICENSEE
EVENT

REPORT 96-013: AUTOMATIC REACTOR SCRAM INITIATED BY TURBINE.

Licensee Event Report 96-013: AUTOMATIC REACTOR SCRAM INITIATED BY
TURBINE TRIP, is attached. This event is reportable to the Nuclear
Regulatory Commission in accordance with 10 CFR 50.73(a)(2)(iv) - Any
event or condition that results in a manual or automatic actuation of any
Engineered Safety Feature (ESF), including the Reactor Protection System.

Patrick M Donnelly
Plant Manager

CC: Administrator, Region III, USNRC
NRC Resident Inspector Big Rock Point

ATTACHMENT

A CMS ENERGY COMPANY

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